

REMARKS/ARGUMENTS

Applicant responds herein to the Office Action dated September 12, 2005.

The Office Action has been carefully considered. Claims 1-21 are pending in the present application with claim 1 being in independent form. A copy of the presently pending claims with an indication of their present status is included herewith for the Examiner's convenience.

Claims 1-3, 5, 6 and 8-19 have been rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 5,929,908 to Takahashi.

The Examiner contends that Takahashi discloses an information acquiring means, making reference to histogram generator 8, that acquires information concerning the dynamic range prior to actual photographing. The Examiner further contends that an analyzing means, with reference to dynamic range expansion deciding unit 9 of Takahashi, analyzes the information acquired by the information acquiring means. Further, the Examiner contends that a conditions-for-photographing setting means, making reference to parameter determination unit 10 of Takahashi, is provided for setting conditions for photographing based on the results of the analysis performed by the analyzing means and that a photographing means, making reference to exposure controller 11, lens 1, low-pass filter 2, iris diaphragm 3, and CCD 4, performs the actual photographing under the conditions set bet by the conditions-for-photographing setting means. The Examiner further makes reference to Figure 1, Col. 5, Lines 5-45 of Takahashi. Applicant respectfully disagrees.

Takahashi, as understood by Applicant, relates to an image sensing apparatus which senses an object a plurality of times in different exposures to obtain a plurality of images and makes a single image with a widened dynamic range by processing the plurality of sensed images. More specifically in Takahashi, an image of a scene is captured in analog form on the CCD 4 by sensing the scene at a first exposure. The analog image data is converted into digital data by an analog digital converter and stored in a memory 7. The digital data stored in the memory 7 is sent to a histogram generator 8 where a histogram of the number of events of signal levels of the standard image data is generated. A dynamic range expansion deciding unit 9 decides whether a dynamic range expansion process is to be performed or not based on the

generated histogram. This decision is made in accordance with the total number of events of signal levels of the standard image data that are in different ranges and predetermined thresholds regarding the numbers of events. If a certain condition is satisfied, it is decided that the dynamic range expansion need not be performed. In this case, the image data storage memory 7 is read and outputted through an image processing unit without changing the standard image data. When it is decided that the dynamic range expansion processing should be performed, the parameter determination unit 10 determines parameters such as a value for the iris diaphragm and an electronic shutter speed, for sensing a second image as a non-standard image in a second exposure based on the histogram generated by the histogram generator 8. The shutter speed for sensing the non-standard image may be determined based upon a comparison of the number of events of signal levels in the histogram within certain ranges as compared to threshold values for those ranges. Based on this comparison, various conditions are set. The determined value for the iris diaphragm and the determined shutter speed for the non-standard image is sent to the exposure controller 11 which controls the iris diaphragm and the CCD and the non-standard image is obtained based on those values. The image data for the non-standard image is analog-digital converted, and the converted image data is stored in memory 6. The image data stored in memory 6 and the image data stored in memory 7 are sent to the image processing unit 12 where these two sets of data are processed and made into a single image. See Takahashi, Col. 5, Line 3 to Col. 6, Line 49.

Claim 1 of the present application relates to an image pickup apparatus that includes “an information acquiring means for, prior to actual photographing, acquiring information concerning a dynamic range, which is required to photograph a photographic scene, with a condition for exposure varied diversely; an analyzing means for analyzing the information acquired by said information acquiring means; a conditions-for-photographing setting means for setting the conditions for actual photographing according to the result of the analysis performed by said analyzing means; and a photographing means for performing actual photography under the conditions for actual photographing set by said conditions-for-photographing setting means”.

Takahashi fails to show or suggest an image-pickup apparatus including “an information acquiring means for, prior to actual photographing, acquiring information concerning a dynamic

range” or “with a condition for exposure varied diversely” as recited in claim 1 of the present application. As noted above, in Takahashi, a first image, or standard image, is taken and stored in memory 7. It is only when the dynamic range expansion deciding unit 9 decides that dynamic range expansion processing is to be performed based on the histogram generated by the histogram generator 8, that the second picture, or non-standard, image is taken. Thus, in Takahashi, the first image taken is the actual photograph unless it is decided that the dynamic range expansion processing should be performed. Accordingly, any information acquired via the histogram generator 8 is not acquired prior to actual photographing as substantially cited in claim 1 of the present application. In addition, the first image is taken under a single exposure condition. Thus, the information that is acquired by the histogram generator of Takahashi is not gathered “with a condition for exposure varied diversely.”

Similarly, Takahashi fails to show or suggest an image-pickup apparatus including “a conditions for photographing setting means for setting the conditions for actual photographing according to the result of the analysis performed by such analyzing means” or “a photographing means for performing actual photographing under the conditions for actual photographing set by conditions for photographing setting means”. As noted above, the first image stored in memory 7 in Takahashi is the actual photograph when it is decided that the dynamic range expansion processing need not be performed. However, the image saved in memory 7, is not photographed “under the conditions for actual photographing set by said conditions for photographing setting means” as required by claim 1. In addition, it is noted, that in Takahashi the actual photograph includes the data stored in the memory 7 even when it is decided that a dynamic range expansion processing is necessary. That is, a different value for the iris diaphragm and/or different shutter speed is used to take the second non-standard image which is stored in memory 6, however, the actual photograph in Takahashi is a synthesis of the image stored in memory 6, the second non-standard image and the first image, that which is stored in memory 7.

Regardless, the applicant has further amended the definition of the invention set forth in claim 1 whereby, as amended, claim 1 is directed to an invention which comprises “an information acquiring means for, prior to actual photographing, acquiring information concerning

a dynamic range, which is required to photograph a photographic scene, with a condition for exposure varied diversely” and further includes “an analyzing means for analyzing the information acquired by the information acquiring means”, including “an information synthesizing means for synthesizing the information concerning a dynamic range acquired by the information acquiring means” and “a histogram arithmetic means for producing a histogram of the synthesized information”.

Therefore, in the invention of claim 1, as presently amended, prior to actual photographing, information concerning the dynamic range is acquired with the condition for exposure varied diversely, and the information concerning the dynamic range acquired with the condition for exposure varied directly is synthesized. Furthermore, a histogram of the synthesized information is produced.

In addition to the foregoing, claim 1, as amended, also includes “an image information converting means for converting an image produced during actual photographing according to the result of analysis performed by the analyzing means”. Therefore, in the invention of claim 1, the image produced during actual photographing is converted using the histogram of the synthesized information.

In marked contrast, Takahashi neither discloses nor suggests an apparatus that is defined in claim 1, which is able to synthesize the information concerning the dynamic range acquired with the condition for exposure very diversely and which further produces the histogram of the synthesized information. Further, Takahashi neither discloses nor suggests an apparatus as in claim 1, which is able to convert an image produced during an actual photographing using a histogram of the synthesized information, as discussed above. None of the other references cited provide or bridge the shortcoming of the teachings of Takahashi, as neither discloses nor suggests, whether taken alone or in combination, the constitution and arrangement of elements as defined in claim 1, as described above.

Accordingly it is respectfully submitted that claim 1 and the claims depending therefrom, including claims 2, 3, 5, 6 and 8-19 are patentable over the cited art for at least the reasons discussed above.

Claim 4 stands rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Takahashi in view of U.S. Patent No. 6,850,642 to Wang.

With regard to claim 4, the Examiner contends that Takahashi shows the elements of claim 4, however, the Examiner concedes that Takahashi does not show a gray scale arithmetic means and contends that Wang shows this feature and that it would have been obvious to combine Wang with Takahashi in order to disclose the features of claim 4. Applicants respectfully disagree.

Wang, as understood by Applicant, relates to non-linearly mapping an image with a higher number of bits to an image with a smaller number of bits while preserving at least part of the local contrast. More specifically, Wang discloses dynamic range equalization by histogram modification at which a histogram is analyzed to determine the locations of peaks. The mapping function is formed which relates to locations of the peaks in a histogram. That mapping function may have areas of high slope near the peaks. The mapping function is used to form a compressed histogram, which has the required number of levels to display on a display device. See Wang, Abstract.

Claim 4 depends from independent claim 1. As noted above, it is respectfully submitted that claim 1 is patentable over Takahashi for at least the reasons described above. Further, it is respectfully submitted that claim 1 is patentable over the combination of Takahashi and Wang, since Takahashi and Wang, either alone or in combination, fail to show or suggest the patentable features of claim 1 as described above. Accordingly it is respectfully submitted that claim 1 and the claims depending therefrom, including claim 4, are patentable over the cited art for at least the reasons discussed above.

Claims 7, 20 and 21 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Takahashi in view of U.S. Patent No. 4,647,975 to Alston.

The Examiner contends that Takahashi discloses all the limitations of claim 1, however, the Examiner concedes that Takahashi fails to show a flashlight emitting means. The Examiner contends that Alston, however, does show flashlight emitting means and that it would have been obvious to combine the flashlight emitting means of Alston with Takahashi to yield the limitations of claims 7, 20 and 21. Applicant respectfully disagrees.

Alston, as understood by Applicant, relates to an electronic imaging camera with an expanded dynamic exposure range implemented using two succeeding exposure intervals. See Alston, Abstract.

Claim 7, 20 and 21 depend from independent claim 1, either directly or indirectly. As noted above, it is respectfully submitted that claim 1 is patentable over Takahashi for at least the reasons discussed above. Further, it is respectfully submitted that claim 1, and the claims depending therefrom, including claims 7, 20 and 21, are patentable over Takahashi in view of Alston since Takahashi and Alston, either alone or in combination, fail to show or suggest the patentable features of claim 1 as described above.

In light of the remarks made herein, it is respectfully submitted that claims 1-21 of the present application are patentable over the cited art for at least the reasons mentioned above.

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims and pass this case to issue.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on December 12, 2005

Max Moskowitz

Name of applicant, assignee or
Registered Representative

Signature

December 12, 2005

Date of Signature

Respectfully submitted,

Max Moskowitz

Registration No.: 30,576

OSTROLENK, FABER, GERB & SOFFEN, LLP

1180 Avenue of the Americas

New York, New York 10036-8403

Telephone: (212) 382-0700